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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,348	08/27/2003	Steven E. Brown	03029	4171

7590 01/18/2005

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EXAMINER

FITZGERALD, JOHN P

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 01/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

JB

Office Action Summary	Application No. 10/649,348	Applicant(s) BROWN ET AL.	
	Examiner John P Fitzgerald	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings/Specification

1. The drawings (replacement of Figures 1 and 3) were received on 29 October 2004. These drawings are accepted, and previous objections to the drawings are hereby withdrawn. In addition, all previous objections to the specification are hereby withdrawn.

Response to Arguments

2. Applicant's arguments, see pages 5 and 6, filed 29 October 2004, with respect to rejections under 35 U.S.C. § 112, second paragraph, have been fully considered and are persuasive. The rejection of claims 1 and 5 has been withdrawn.

3. Applicant's primary argument against the rejection of the claims is the combination of the Chibowski et al. reference and the Clint reference. Applicant argues that the Chibowski et al. reference only disclose the work of cohesion W_c of the "spreading film" (i.e. liquid) not the work of cohesion W_c of the solid. The Examiner respectfully disagrees. While it is true that Chibowski et al. equations (13) are applicable to the "spreading film" (i.e. liquid), the Applicant is directed to page 475, paragraph 2, in which Chibowski et al. clearly state that the derivations of the equations (13) and others "can be applied also to a porous bed of solid powder." While Examiner finds this to be well within the common knowledge of one having ordinary skill in the art, the Chibowski et al. reference clearly states that the work of cohesion and/or adhesion can be applied to a solid, since, for example, solid powders can take on fluid-like behaviors due to their

Art Unit: 2856

inherent nature of behaving “flow-like” as individual particles have the inherent inability to resist shear stress.

4. Applicant additionally argues that the rejection of the dependent claims as the Examiner has not established a *prima facie* case of obviousness. The Examiner respectfully disagrees and clearly stated the physical/scientific reasoning to the rejection. The Examiner emphatically restates that the utilization of various rheological properties (i.e. shearing stress/rate, viscosity, elastic modulus, yield point, etc.) of a material in a functional relationship between the difference of the work of cohesion and the work of adhesion is well within the purview of one of ordinary skill in the art and is based on design choice for exploring the particular chosen rheological property and its functional behavior and/or relationship to other measured/calculated parameters. These and other methods employed by one of ordinary skill in the art are considered “basic scientific/mathematical” methods, and as such, well within the purview of one of ordinary skill in the art. Applicant should note that the previous rejection of claims 1 and 5 under 35 U.S.C. § 112, second paragraph, were withdrawn based on the Applicant’s identical argument, that one of ordinary skill would clearly be “understood” by one of ordinary skill, having the “basic scientific/mathematical” skills to employ any type of functional relationship with given determined parameters/data (i.e. independent and dependent variables), thus providing a better understanding of the data measured and what it represents “physically” in a graphical form. Lastly, it is noted that the Applicant has failed to refute these “basic scientific” methods/principle statements made by the Examiner.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim 1-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over “Adhesion and components of solid surface energies by John H. Clint, published in *Current Opinion in Colloid & Interface Science* 6, pp. 28-33 (2001) and “A Novel Method for Surface Free-Energy Determination of Powdered Solids” by Emil Chibowski et al., published in *Journal of Colloid and Interface Science* 240, 473-479 (2001). Clint discloses a method for determining a rheological master curve (Fig. 1) (work of adhesion W_a vs. rheological property of shear strength τ) for a filler in a matrix composition (as well as thus predicting a value for a rheological property as recited in claim 8) having all of the claimed method steps and elements including determining the work of adhesion W_a , determining the surface energy components from contact angles utilizing probe liquids (note: similar methods employed for fillers, probe solids, matrices, etc., is well within the purview of one of ordinary skill in the art, as recited in claim 2 a., b. c. and d.) However, Clint does not expressly disclose the determination of the work of cohesion W_c of the filler, subsequent determination of the difference between the work of cohesion and adhesion ($W_c - W_a$) and correlating the result (i.e. forming a functional relationship) to a rheological property to form the rheological curve. Chibowski et al. teach the determination of surface energies, contact angles for a least three probe liquids, work of adhesion W_a (eqn. 5), work of cohesion W_c for a filler and the difference between the two forming functional relationships based on the difference of the works of adhesion and cohesion (eqns. 13-16). It would have been obvious to one having ordinary skill in the art at the time the invention was

Art Unit: 2856

made to employ include the method steps of determining the work of cohesion and subsequently employing the difference between the work of cohesion and the work of adhesion, as taught by Chibowski, and thus modifying the correlation (i.e. functional relationship) of Fig. 1, disclosed by Clint, forming a new correlation (functional relationship) between the rheological property of shear strength τ to the difference between the work of cohesion and the work of adhesion to more accurately describe the surface free-energy of the system. In specific regards to claim 3, 4, 6, 7, 9 and 10, the utilization of various rheological properties (i.e. shearing stress/rate, viscosity, elastic modulus, yield point, etc.) of a material in a functional relationship between the difference of the work of cohesion and the work of adhesion is well within the purview of one of ordinary skill in the art and is based on design choice for exploring the particular chosen rheological property and its functional behavior and/or relationship to other measured/calculated parameters. Lastly, regarding method claim 11, it would have been well within the skill level of one ordinary in the art to perform the repetition of any method steps and the subsequent further determination of results based on the rheological master curve disclosed by Clint and Chibowski.

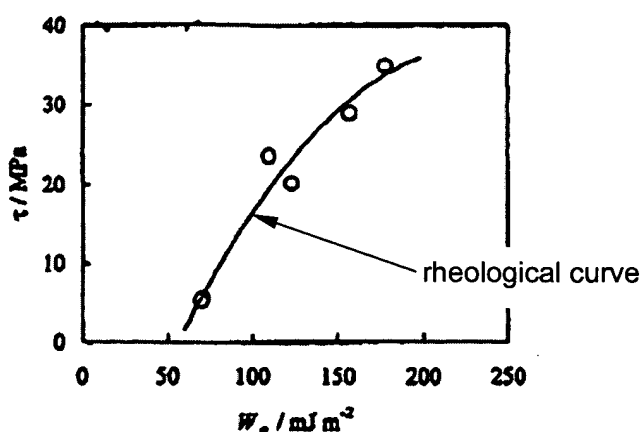


Fig. 1

Clint

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Fitzgerald whose telephone number is (571) 272-2843. The examiner can normally be reached on Monday-Friday from 7:00 AM to 3:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have

Art Unit: 2856

questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JF

01/13/2005



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